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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,731	07/31/2001	Mohamed Imam	ONS00187	1255

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EXAMINER

ROMAN, ANGEL

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 03/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,731

Applicant(s)

IMAM ET AL.

Examiner

Angel Roman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Oath/Declaration

1. An acceptable Substitute Declaration & Power of Attorney was received on 12/24/02.

Drawings

2. The drawings are objected to because the numbers 102 and 104 are not clearly legible in Figure 2. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 21-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baliga et al. U.S. Patent 4,717,679.

Baliga et al. discloses a method of making a semiconductor device comprising; providing a substrate 14 having a surface and a diffused region of a second conductivity type for forming a channel of the semiconductor device; forming a drain 28 of a first conductivity type at the surface for electrically coupling a drain electrode to the channel; growing an oxide 36 over the drain 28; and introducing dopants of a second conductivity type through the oxide between the channel and the drain electrode to form first charge balancing layer 50 within the drain 28 and at the surface (see figure 1J).

The step of forming the drain comprise forming a first area 16 of a first dopant concentration by performing a first area implant (see column 5, lines 42-56); and forming a second area 28 of second dopant concentration different than the first dopant concentration by performing a second area implant, the second area implant is laterally offset from the first area (see figure 1C).

Dopants of a second conductivity type are introduced through the oxide 36 to form a second charge-balancing layer 44 within the drain 28 and under the first charge balancing layer 50 (see figure 1J).

A gate region (38, 40) is formed overlying the oxide 36 (see figure 1H).

Baliga et al. also discloses forming a diffused region 22 of the first conductivity type and forming a source diffusion region 54 in the diffused region.

A drain diffusion region 56 is formed at the surface of the drain 28.

The dopants are introduced by disposing a first island of dielectric material (30, 46) at a top of the substrate within the drain 28; disposing a second island 18 of dielectric material at a top of the substrate within the drain and laterally separated from the first island (30, 46) of dielectric material; and masking the dopants with the first and second islands to form the first charge balancing layer between the first and second islands of dielectric material (see figure 1J).

Baliga et al. is applied as above but lacks anticipation on disclosing an oxide 36 with a thickness of less than about 1000 angstroms and forming the first and second island of dielectric material to a thickness of greater than one micrometer.

With respect to disclosing an oxide 36 with a thickness of less than about 1000 angstroms and forming the first and second island of dielectric material to a thickness of greater than one micrometer, Baliga et al. discloses a thickness of 1000 angstroms for oxide 36 (see column 10, lines 1-10) and a second island 18 with a thickness of one micrometer, selecting an optimum thickness of less than 1000 angstroms for the oxide layer 36 and greater than 1 micrometer for the islands in the primary reference of Baliga et al. is only considered to be routine optimization of the process disclosed by Baliga et al. based on a desire accuracy of the implantation process since Baliga et al. is already

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disclosing a 1000 angstroms thick oxide layer 36 and a 1 micrometer thick island layer 18.

Response to Arguments

5. Applicant's arguments with respect to claims 21-29 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kim et al., Tukizi and Rumennik et al. disclose methods of making semiconductor devices by introducing dopants of a second conductivity type through oxides between channels and drain electrodes to form charge balancing layers within drains and at surfaces of substrates.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

8. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Roman whose telephone number is (703) 306-0207. The examiner can normally be reached on Monday-Friday 8:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

AR
March 3, 2003


John F. Niebling
Supervisory Patent Examiner
Technology Center 2800